# Trend Study 8A-2-00

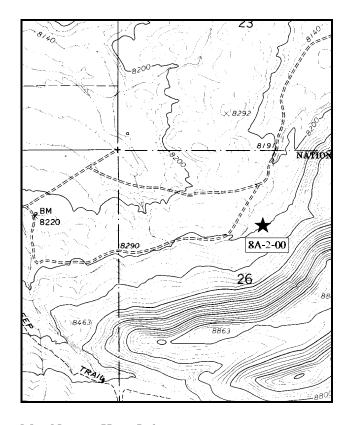
Study site name: Widdop Mountain North Slope . Range type: True Mountain Mahogany .

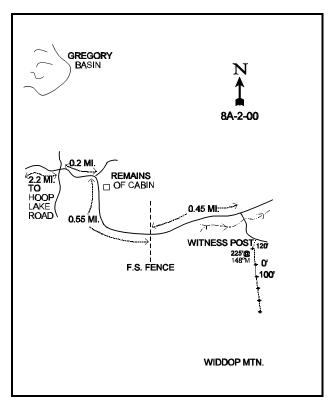
Compass bearing: frequency baseline 146°M.

First frame placement on frequency belts <u>5</u> feet. Frequency belt placement; line 1 (11 & 95ft), line 2 (34ft), line 3 (59ft.), line 4 (71ft).

# **LOCATION DESCRIPTION**

Two miles south of the Wyoming-Utah state line, on the Hoop Lake Road along the Middle Fork of Beaver Creek, turn east toward Gregory Basin. Go 0.6 miles to a private property fence. Continue east 1.1 miles, going past a cabin to a fence. Go 0.1 miles to a fork, continue straight. Go 0.4 miles to an old 4-way intersection south of Gregory Basin. Continue straight east 0.2 miles to an old cabin, bear right. Proceed 0.55 miles to the FS boundary fence. Go along the bottom 0.45 miles to a faint fork. Bear right and go across the stream. Continue east 0.1 miles towards the base of Widdop Mountain. On the south side of the road, look for a witness post in the sagebrush. The 0-foot baseline stake is 225 feet south of the witness post at 148°M.





Map Name: Hoop Lake

Township <u>3N</u>, Range <u>16E</u>, Section <u>26</u>

Diagrammatic Sketch

UTM 4535338 N, 576248 E

### DISCUSSION

### Trend Study No. 8A-2

The Widdop Mountain North Slope study is located on the opposite side of the mountain from the previous study (#8A-1). This site on Widdop Mountain also samples a true mountain mahogany type that has a northwest aspect. It is moderately steep at the top, but more gentle towards the bottom where the study is located. The site has a slope of approximately 22% and an elevation of 8,300 feet. Although located on a northerly exposure, this hillside receives considerable use by elk in the winter. Pellet group data from 2000 estimate 44 elk, 3 deer and 12 cow days use/acre (109 edu/ha, 7 ddu/ha and 30 cdu/ha). Quite a few moose also appear to be using this site along with a few antelope. Most of the elk pellet groups appear to be from winter use while moose seem to be using the site more in the spring. There is excellent thermal and escape cover provided by a nearby dense conifer stand.

Soils on the site are moderately deep but variable. Effective rooting depth is estimated at nearly 14 inches, but soil depth varies between 11 inches at the bottom of the slope to 16 inches further up the slope at the end of the baseline. The study site begins further up slope where mountain mahogany is found and runs downhill where black sagebrush becomes dominant on more shallow soils at the bottom of the slope. Near the top of the slope there is abundant gravel in the soil profile which becomes small cobble further down. There is also calcium carbonate deposits on the rocks. Soil penetrometer readings suggest that most of the rock is concentrated within the top 8 inches of the soil profile. The soil has a loam texture with a slightly alkaline reactivity (pH of 7.4). It is high in percent organic matter but very low in phosphorus at only 3.4 ppm. Values less than 10 ppm can limit normal plant growth and development. Soil parent material is identical to 8A-1, with both limestone and sandstone. The ground surface is well covered by vegetation and litter leaving little bare ground exposed. Aside from some mild soil pedestaling on the uphill side of shrubs, there is little soil movement or erosion on the site.

The slope is dominated by true mountain mahogany, associated with snowberry, pockets of black sagebrush and occasionally mountain big sagebrush and serviceberry. These secondary browse comprise about 37%-38% of the browse cover and show mostly light to moderate use. Mahogany provides nearly half of the browse cover with a current ('00) density of 7,360 plants/acre. Mountain mahogany density was estimated at 24,332 plants/acre in 1988. Similar to site #1, the majority of the population consisted of young plants (89%) in 1988, which became established during years of above average precipitation, then thinned out during the extended drought. Mature plants numbered 2,066 plants/acre in 1988 and averaged about 2 feet in height. Twelve percent of the population displayed heavy utilization with generally good vigor. During the 1995 reading, there were an estimated 6,880 plants/acre. The drop in density is primarily from the great reduction in the number of young plants. Changes in density could also be due to the greatly enlarged sample size used beginning in 1992 which more accurately estimates shrub populations. Seedlings also declined from 6,600 in 1988 to 2,440 by 1995 and 1,180 in 2000. The number of mature plants increased from 2,066 plants/acre in 1988, to 3,680 plants/acre in 1995 and 2000. Use is lighter on this site compared to 8A-1 Widdop Mountain South Slope. Use was light to moderate in 1988 increasing to moderate to heavy in 1995. Currently ('00), 41% of the mahogany is heavily browsed. Some of the increase in heavy use may be due to the poor annual leader growth of only 2.4 inches in 2000. Poor leader growth gives plants the appearance of heavier use than what actually occurred. Even with the heavy use, the mahogany is healthy, vigor is normal and percent decadence is low.

Grasses are diverse and moderately abundant, accounting for nearly 13% cover in 1995 and 15% in 2000. Prominent species include: bluebunch wheatgrass, Carex, mutton bluegrass and needle-and-thread. Forbs are diverse with over 20 species encountered in 1995 and 2000. Common species are low growing forbs like desert phlox, pussytoes, ballhead sandwort and sulfur eriogonum. Desirable species include: yellow Indian paintbrush, Lewis flax and low penstemon.

### 1995 TREND ASSESSMENT

Even with drought conditions, ground cover characteristics have improved on this site. Percent bare ground has declined from 12% to 6% and percent litter cover has remained steady at 57%. There is more than adequate ground cover to control erosion. Trend for soil is up. The browse trend is stable for most of the palatable species, especially so for the key species, true mountain mahogany. The large numbers of seedlings and young estimated in 1988, were inflated due to above average precipitation in the mid-1980's in conjunction with the much smaller sample size used in 1988. The number of mature plants increased in 1995 and percent decadence remained low at 2%. The number of seedlings and young declined, but they remain at a high level and are adequate to maintain the population. Secondary browse species, serviceberry, black sagebrush, mountain big sagebrush and snowberry provide additional forage. These species generally display stable to improving trends with light to moderate use. The herbaceous trend is mixed. Sum of nested frequency of grasses has remained stable while nested frequency of forbs declined. This is a common trend during dry years. Combined nested frequency for grasses and forbs have declined slightly indicating a slightly downward trend.

## TREND ASSESSMENT

<u>soil</u> - up (5)

browse - stable (3)

herbaceous understory - slightly down (2)

### 2000 TREND ASSESSMENT

Trend for soil is stable even though percent bare ground increased slightly. The ratio of protective cover (vegetation, litter and cryptogams) to bare ground has remained identical to 1995 at 3.8 to 1. Vegetation and litter cover are abundant and well dispersed and erosion is minimal. Trend for the key browse species, mountain mahogany, is also stable. Use is heavier with 41% of the shrubs sampled being heavily browsed. However, vigor is normal and percent decadence is still relatively low. Biotic potential (# of seedlings) has declined from 35% to 16%, but the proportions of young and mature plants have remained similar. Trend for the herbaceous understory is mixed. Sum of nested frequency of perennial grasses has declined slightly, with frequency of perennial forbs declining moderately. This decline is a common trend in the state this year due to the dry conditions. Trend is considered down slightly since forbs and grasses both showed downward trends.

### TREND ASSESSMENT

soil - stable (3)

browse - stable (3)

herbaceous understory - slightly down due to drought (2)

# HERBACEOUS TRENDS --

Herd unit 08	A, Study no	: 2
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Herd unit 08A, Study no: 2  T Species y	Nested	Freque	ncy	Quadra	nt Frequ	ency	Average Cover %	
p e	'88	'95	'00	'88	'95	'00'	'95	'00'
G Agropyron dasystachyum	a-	a <sup>-</sup>	<sub>b</sub> 7	-	-	3	-	.04
G Agropyron spicatum	151	154	169	55	61	63	2.74	5.26
G Bromus inermis	-	3	-	-	2	-	.01	1
G Carex spp.	<sub>a</sub> 59	<sub>b</sub> 115	<sub>b</sub> 132	32	45	54	2.68	5.48
G Koeleria cristata	a <sup>-</sup>	<sub>b</sub> 29	ь17	-	13	7	.16	.18
G Leucopoa kingii	<sub>b</sub> 26	<sub>a</sub> 9	<sub>ab</sub> 18	12	3	8	.04	.43
G Oryzopsis hymenoides	-	3	3	-	1	2	.15	.03
G Poa fendleriana	<sub>b</sub> 104	<sub>a</sub> 17	<sub>a</sub> 42	42	7	15	.28	2.90
G Poa secunda	a <sup>-</sup>	<sub>b</sub> 32	<sub>b</sub> 37	-	14	15	.14	.25
G Stipa comata	<sub>a</sub> 174	<sub>a</sub> 148	<sub>b</sub> 43	63	53	18	6.46	.67
Total for Annual Grasses	0	0	0	0	0	0	0	0
Total for Perennial Grasses	514	510	468	204	199	185	12.69	15.27
Total for Grasses	514	510	468	204	199	185	12.69	15.27
F Allium spp.	-	3	-	-	1	-	.00	-
F Antennaria rosea	<sub>a</sub> 17	<sub>b</sub> 39	ab22	7	16	10	.25	.29
F Androsace septentrionalis (a)	-	1	2	-	1	1	.00	.00
F Arabis spp.	<sub>b</sub> 33	<sub>b</sub> 23	<sub>a</sub> 5	18	12	2	.08	.03
F Arenaria congesta	<sub>a</sub> 96	<sub>a</sub> 101	<sub>b</sub> 58	42	44	25	1.25	.54
F Astragalus convallarius	a-	<sub>a</sub> 3	<sub>b</sub> 10	-	1	6	.03	.15
F Astragalus spp.	17	25	14	10	11	8	.20	.06
F Castilleja flava	<sub>b</sub> 21	<sub>ab</sub> 10	<sub>a</sub> 6	12	7	3	.11	.04
F Calochortus nuttallii	a <sup>-</sup>	<sub>b</sub> 5	a <sup>-</sup>	-	4	-	.02	ı
F Chenopodium leptophyllum (a)	-	<sub>6</sub> 8	a <sup>-</sup>	-	3	ı	.01	ı
F Crepis acuminata	<sub>b</sub> 5	a <sup>-</sup>	a <sup>-</sup>	4	-	-	-	1
F Cruciferae	2	1	1	1	-	1	1	1
F Cryptantha spp.	<sub>ab</sub> 4	a <sup>-</sup>	8 <sub>d</sub>	2	-	5	-	.05
F Descurainia pinnata (a)	-	-	5	-	-	2	-	.01
F Erigeron eatonii	<sub>b</sub> 90	<sub>a</sub> 32	<sub>a</sub> 22	39	16	12	.08	.11
F Eriogonum umbellatum	<sub>b</sub> 24	<sub>ab</sub> 25	<sub>b</sub> 49	12	12	22	.62	.68
F Heuchera parvifolia	<sub>b</sub> 8	<sub>ab</sub> 1	a <sup>-</sup>	5	1	-	.03	-
F Hymenoxys acaulis	_	7	3	_	2	1	.03	.15
F Lesquerella spp.	<sub>b</sub> 46	<sub>a</sub> 8	<sub>ab</sub> 23	23	7	15	.03	.12
F Linum lewisii	2	10	5	1	5	3	.10	.07
F Lupinus spp.	<sub>b</sub> 21	a <sup>-</sup>	a <sup>-</sup>	10		-	_	
F Lychnis drummondii	-	2	3	-	1	1	.00	.00
F Machaeranthera canescens	a <sup>-</sup>	<sub>b</sub> 8	<sub>b</sub> 6	-	4	3	.19	.18

T y p	Species	Nested	Freque	ncy	Quadra	ıt Frequ	ency	Average Cover %	
e		'88	'95	'00	'88	'95	'00	'95	'00
F	Machaeranthera grindelioides	-	-	1	-	-	1	-	.03
F	Penstemon humilis	<sub>b</sub> 92	<sub>b</sub> 90	<sub>a</sub> 39	44	38	20	1.05	.64
F	Penstemon spp.	-	3	1	-	1	1	.00	1
F	Petradoria pumila	<sub>b</sub> 3	a <sup>-</sup>	a <sup>-</sup>	3	-	1	-	-
F	Phlox austromontana	144	133	113	57	57	44	3.98	3.90
F	Phlox longifolia	<sub>b</sub> 143	<sub>a</sub> 75	<sub>a</sub> 70	55	36	32	.40	.58
F	Potentilla gracilis	a <sup>-</sup>	<sub>b</sub> 21	<sub>b</sub> 14	-	11	6	.08	.05
F	Sedum lanceolatum	-	-	1	-	-	1	-	.03
F	Senecio multilobatus	a-	a <sup>-</sup>	<sub>b</sub> 7	-	-	4	-	.09
F	Taraxacum officinale	-	1	1	-	1	1	.00	1
F	Zigadenus paniculatus	36	32	32	17	19	15	.12	.14
To	otal for Annual Forbs	0	9	7	0	4	3	0.01	0.01
Т	otal for Perennial Forbs	804	657	511	362	307	239	8.70	7.98
To	otal for Forbs	804	666	518	362	311	242	8.72	8.00

Values with different subscript letters are significantly different at % = 0.10

# BROWSE TRENDS --Herd unit 08A, Study no: 2

T y p	Species	Strip Frequen	ncy	Average Cover %	
e		'95	'00	'95	'00
В	Amelanchier utahensis	21	29	1.14	1.81
В	Artemisia nova	40	25	1.20	.97
В	Artemisia tridentata vaseyana	3	8	.41	.66
В	Cercocarpus montanus	97	97	19.55	19.04
В	Chrysothamnus viscidiflorus lanceolatus	80	73	3.75	3.28
В	Eriogonum microthecum	80	78	2.24	3.62
В	Gutierrezia sarothrae	23	16	.11	.39
В	Mahonia repens	1	2	-	.03
В	Symphoricarpos oreophilus	82	85	13.37	12.45
В	Tetradymia canescens	26	27	.34	.45
To	otal for Browse	453	440	42.15	42.73

## BASIC COVER --

Herd unit 08A, Study no: 2

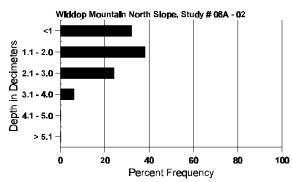
Cover Type	Nested Frequence	су	Average	Cover %	
	'95	'00	'88	'95	'00
Vegetation	359	354	12.75	53.54	60.28
Rock	159	65	2.75	2.89	1.05
Pavement	166	163	15.25	3.31	7.23
Litter	397	383	57.25	57.47	59.54
Cryptogams	25	23	0	.15	.33
Bare Ground	205	198	12.00	6.32	13.68

## SOIL ANALYSIS DATA --

Herd Unit 8A, Study # 2, Study Name: Widdop Mountain North Slope

Effective rooting depth	Temp °F (depth)	pН	%sand	%silt	%clay	%0M	PPM P	РРМ К	dS/m
(inches)									
13.84	57.6 (15.83)	7.4	43.3	34.2	22.6	5.5	3.4	115.2	0.9

# Stoniness Index



# PELLET GROUP FREQUENCY --

Herd unit 08A, Study no: 2

Type	Quadra Freque	
	'95	'00
Antelope	-	14
Moose	8	-
Elk	19	17
Deer	4	1
Cattle	-	1

Pellet T	ransect
Pellet Groups per Acre	Days Use per Acre (ha)
000	<b>(</b> 00
139	12 (29)
278	16 (38)
574	44 (109)
44	3 (8)
139	12 (29)

# BROWSE CHARACTERISTICS --

Herd unit 08A, Study no: 2

		nit 08A,														Ι.	1_	
A G	Y R	Form C	lass (N	No. of	Plants	)					Vigor C	lass			Plants Per Acre	Average (inches)	Т	otal
E		1	2	3	4	5	6	7	8	9	1	2	3	4		Ht. Cr.		
A	mela	ınchier u	tahens	sis														
	88	1	-	-	-	-	-	1	-	1	2	-	-	-	133			2
	95	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
	00	6	-	-	-	-	-	-	-	-	6	-	-	_	120			6
Y	88 95	4 6	1 6	-	2 4	-	-	-	-	-	6 16	-	1	-	466 320			7 16
	93	7	5	-	1	2	-	2	-	-	17	-	-	_	340			17
M	88			1						_	1		_	_	66	39 3	31	1
141	95	-	1	-	5	7	2	_	_	-	15	_	_	_	300		12	15
	00	3	3	1	1	2	3	1	-	-	14	-	-	-	280	28 2	22	14
D	88	-	-	1	-	-	-	-	-	-	1	-	-	-	66			1
	95	-	-	1	-	-	1	-	-	-	1	-	-	1	40			2
	00	1	-	3	-	1	1	-	-	-	5	-	-	1	120			6
X	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95 00	-	-	-	-	-	-	-	-	-	-	-	-	-	0 20			0
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		'00'		35%	Ó		229	o o		03	3%							
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													'95		660			6%
													'00'	)	740			16%
_		isia frigi	da													T		
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	95 00	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
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		'95		00%			00%				)%							
		'00		00%			00%				)%							
T/	atal I	Plants/Ac	era (av	cludir	ng Der	ad & C	leedlir	uc)					'88	!	266	Dec:		
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A	rtem	isia nova	ì							<u> </u>								
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	95	9	-	-	2	-	-	-	-	-	11	-	-	-	220			11
	00	3	-	-	-	-	-	-	-	-	3	-	-	-	60			3
Y	88	25	1	-	2	-	-	-	-	-	9	17	2	-	1866			28
	95 00	7 10	4	-	3	-	-	-	-	-	14 10	-	-	-	280 200			14 10
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141	95	35	20	1	13	_	_	-	_	-	69	-	_		1380		13	69
	00	49	1	-	-	-	1	1	-	-	52	-	-	-	1040	9	14	52
D	88	12	1	-	-	-	-	-	-	-	11	-	2	-	866			13
	95	3	-	-	1	-	-	-	-	-	3	-	-	1	80			4
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				28%	ó		01%	ó		01%					-	-26%		
		'95 '00					020	4		$\Omega\Omega_{0}$								
		'00		029			02%	6		00%								
T	otal l			02%	ó	nd & S				00%			'88		5332	Dec:		16%
T	otal l	'00'		02%	ó	nd & S				00%			'95		1740	Dec:		5%
		'00 Plants/Ad	cre (ex	02% cludin	δ ig Dea	nd & S				00%						Dec:		
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	rtem	'00 Plants/Ad	cre (ex	02% cludin	δ ig Dea	ad & S							'95		1740	Dec:		5%
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A	rtem 88 95	'00 Plants/Ad iisia tride - -	entata	02% cludin vaseya - -	δ ig Dea	- -		ngs) - -	- - -	- -		- - - -	'95 '00 - -		1740 1280 0 0	Dec:		5% 3% 0
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A G	Y R	Form C	lass (l	No. of	Plants	s)					Vigor C	lass			Plants Per Acre	Average (inches)		Total
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C	erco	carpus m	ontan	ius												<u>.                                    </u>		
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	95	72 54	3	7	40	-	-	-	-	-	122	-	-	-	2440			122
37	00	54	-	- 22	5	- 1	-	-		-	59	-	-	_	1180			59
Y	88 95	146 59	59 42	22 8	45 40	1 4	-	52	-	-	323 153	-	2	-	21666 3060			325 153
	00	56	40	4	30	10	4	17	-	-	161	-	-	-	3220			161
N.	88	2	9	20	-	-	-	-	-	-	31	-	-	-	2066	25	18	31
	95	3	18	21	15	93	34	-	-	-	184	-	-	-	3680	26	37	184
_	00	6	36	57	8	9	68	- 1	-	-	184	-	-	-	3680	22	30	184
D	88 95	3	3	2	-	- 4	3	1 -	-	-	8 6	-	1	1	600 140			9 7
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90	Piai	nts Snow 88'	_	20	oderate %	e Use	129	avy Us %	<u>se</u>		oor Vigor 2%	<u>[</u>				<u>% Change</u> -72%	2	
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Т	otal l	Plants/A	cre (e	xcludi	ng De	ad & \$	Seedli	ngs)					'95		6880	Dec:		2%
								ngs)								Dec:		
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A G	Y R	Form Cl	ass (N	lo. of	Plants	)					Vigor C	lass			Plants Per Acre	Average (inches)	Total
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	00	1	-	-	-	-	-	-	-	-	1	-	-	_	20		1
Y	88 95	55 4	-	-	7	-	-	1	-	-	37 4	-	25	1	4200 80		63 4
	00	9	-	-	-	-	-	_	-	-	9	-	-	-	180		9
Μ	88	71	2	_	14	_	_	5	_	-	92	-	_	_	6133	6 7	92
	95	219	2	-	23	-	5	-	-	-	249	-	-	-	4980	8 11	249
	00	146	6	-	31	-	-	-	-	-	181	-	2	-	3660	7 11	183
D	88	2	-	-	-	-	-	-	-	-	2	-	-	-	133		2
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		'95		.79			029			00					•	-23%	
		'00'		039	%		00%	ó		02	%						
Т	otal l	Plants/Ac	re (ex	cludii	ng Dea	ad & S	eedlir	ıgs)					'88	3	10466	Dec:	1%
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A G	Y R	Form	n Clas	ss (N	o. of F	Plants)	)				1	Vigor C	lass			Plants Per Acre	Average (inches)		Total
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To Ps S	eude 88 95 00	Plants otsuga nts Sh	'88 '95 '00 s/Acre a mer - 1	e (exc nziesi - -	00% 00% 00% eludin i		d & S	00% 00% 00% eedlin		- - -	009 009 009	- 1 or Vigor	- - -	'95		0 0 0	-		0
To Ps S	eude 88 95 00	Plants otsuga nts Sh	'88 '95 '00 s/Acre a mer 1 nowin '88	e (exc nziesi - -	00% 00% 00% cluding i - - - - Moc 00%	g Dea	d & S	00% 00% 00% eedlin - - - - <u>Hea</u>	gs)  vy Us	- - -	- - - - - - - - - 00%	- 1 or Vigor	- - -	'95		0 0 0	Dec:		0
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	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches)	Total	
E	K	1	2	3	4	5	6	7	8	9	1	2	3	4	rei Acie	Ht. Cr.		
Sy	mpl	noricarpo	os orec	philu	s													
	88	4	1	-	1	-	-	-	-	-	6	-	-	-	400		6	
	95	4	-	-	5	-	-	-	-	-	9	-	-	-	180		9	
H	00	6		-	2	-	-		-	-	8	-	-		160		8	
Y	88 95	23 25	7 2	3	1 9	-	-	2 3	-	-	32 42	-	1	-	2200 840		33 42	
	00	13	_	-	2	-	-	<i>-</i>	-	-	15	_	-	_	300		15	
Μ	88	33	2	_	4	_	_	_	_	-	38	_	1	_	2600	11 10	_	
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	00	120	3	-	52	1	-	7	-	-	165	1	17	-	3660	11 25	183	
	88	12	-	3	2	-	-	-	-	-	14	-	-	3	1133		17	
	95 00	- 2	-	-	- 2	-	-	-	-	-	3	-	-	-	0 120		0	
H		3		-	3	-	-	-	-	- -	or Vigor	_	-	3	l.	N GI	6	
%	% Plants Showing Moderate Use 10%							Heavy Use Po				•				<u>%Change</u> -13%		
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_	. 11	D1 / /A	,	1 1.	ъ	1.0.0	. 11.	`					100		5022	ъ	100/	
Total Plants/Acre (excluding Dead & S							eedlings)						'88 '95		5933 5140	Dec:	19% 0%	
													'00'		4080		3%	
Те	etrad	ymia cai	nescen	S														
S	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	95	4	-	-	-	-	-	-	-	-	4	-	-	-	80		4	
H	00	1	-	-	-	-	-	-	-	-	1	-	-	-	20		1	
	88	25	1	-	-	-	-	-	-	-	26	-	-	-	1733		26	
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$\vdash$	88	12	3	_	2						17				1133	11 6	_	
	95	25	3 7	_	6	-	-	-	-	-	38	-	-	-	760			
	00	26	2	-	-	-	-	1	-	-	29	-	-	-	580	7 8		
D	88	1	-	_	_	-	-	1	-	-	2	_	-	_	133		2	
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
Ш	00	1	4	-	-	-	-	-	-	-	4	-	-	1	100		5	
0/	% Plants Showing			Moderate Use Heavy Use					<u>se</u>		Poor Vigor				%Change			
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